RAYMING

TripNav™

TN-200 User's Guide v2.0 (WIN)

USB GPS Receiver

TN-200(P) USB GPS RECEIVER

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PACKAGE CONTENTS

- TripNav TN-200 GPS Receiver w/USB cable
- Driver CD-ROM with User's Guide*

SYSTEM REQUIREMENTS

The TripNav GPS requires a Windows or Macintosh laptop computer, with a CD-ROM*, USB port, and NMEA compatible navigation software. The 3rd party mapping/navigation software may have its own system requirements, please check with software vendor for details.

**CD-ROM is required for USB driver installation and access to the User's Guide. If no CD-ROM drive is available, files can be downloaded from the Internet at* : http://rayming.com/downloads.asp

WELCOME

Thank you for purchasing TripNav! TripNav is a USB compatible GPS receiver for your laptop! TripNav allows real-time street navigation by using your laptop for graphical plotting and positioning of your route. Simply load the GPS driver, plug the GPS receiver into your computer's USB port and install your own personal mapping software to begin to view your position in real-time in relation to the surrounding streets in your travel area.

You'll find that almost any NMEA compliant street mapping software is compatible with the TripNav USB GPS receiver. Visit our web-site for recommended mapping programs that you can use. http://www.rayming.com/products/mapchart.htm

SAFETY AND LEGAL NOTICES

Please read this section carefully before using TripNav

Rayming Corporation will not accept any responsibility whatsoever for accidents resulting from failure to observe common sense precautions. Your personal judgement, traffic regulations, and common sense must always take precedence over any directions produced by TripNav or the mapping software

WARNING: Make sure that the GPS receiver is secure and does not interfere with driving visibility and safety.

It is your responsibility as the vehicle operator to securely place the GPS unit and antenna so that they will not interfere with driving and prevent operations of any safety device (such as the Airbag) in your vehicle. Do not mount the devices in a place where the driver or passengers may receive injury during vehicle operation or collision. For your safety, take care to route all cables away from shifters, pedals, accessory controls and mechanisms.

WARNING: Drive safely and use common sense.

It is your responsibility as the vehicle operator to drive safely, observe all traffic rules and above all use your own personal judgment while driving. If you feel that a route suggested by the navigation software instructs you to perform an unsafe or illegal maneuver, places you in an unsafe situation, or routes you into an area which you consider unsafe, do not follow the instructions.

WARNING: Keep your eyes on the road.

It is your responsibility as the vehicle operator to keep your eyes on the road and be an alert driver at all times, especially when the vehicle is moving. The vehicle's operator should not be distracted by the navigation equipment or software. Should there be a distraction with the ability to drive responsibly, please turn off the device. Should you want to look at the display for a prolonged time, park the car safely, while following all traffic regulations before looking at the display.

WARNING: To reduce the risk of fire or shock hazard, do not expose this product to rain or moisture. Do not remove covers or open housings, there are no user serviceable parts inside. Refer servicing to qualified personnel only.

1. GETTING STARTED WITH TRIPNAV

These are only a few simple steps that you need to follow before using your TripNav receiver:

- Install the USB driver and onto your laptop from the included CD-ROM or download the files from our web-site http://rayming.com/downloads.asp
- Install your own personal mapping software and configure the software's COM port setting to accept the GPS.
- Plug-in the GPS receiver into your laptop.

2. SETUP SCREEN

Insert the included TN-200 CD-ROM into your drive and if the "autorun" feature is not enabled on your computer, click on the AUTORUN.EXE file to open the main setup screen. From here you can:

a. Register your product on-line in order to receive technical support and new release notifications.
b.) Install the required USB driver for your TN-200 GPS receiver.
c.) Access the Users Guide.
d.) Install "GPS Info" a test utility program to verify functionality of your GPS receiver.
e.) Install Adobe Acrobat Reader 6.0 if you don't already have it on your computer.

It is highly advisable that you first register your product on-line so that in the even you may need technical support you will have the ability to generate a "Trouble Ticket" from you personal Rayming account. Support will NOT be available by any other means that from a trouble ticket generated from a pre-registered User's own account.

Use this button to install the USB driver files required for Windows to convert the USB port to an assigned internal COM port. USB-to-Serial becomes a Virtual COM Port (VCP) and then recognizes the TN-200 receiver.

Use this button to open this Users Guide document should you have a need to reference or print it in the future. To view this Users Guide, you will need to have Adobe Acrobat Reader installed on your computer.

Use this button to install the GPS utility to verify that your GPS receiver is functioning properly. Be sure to configure the program with the correct COM port assigned to your GPS receiver and you are outdoors with a good view and signal from the sky.

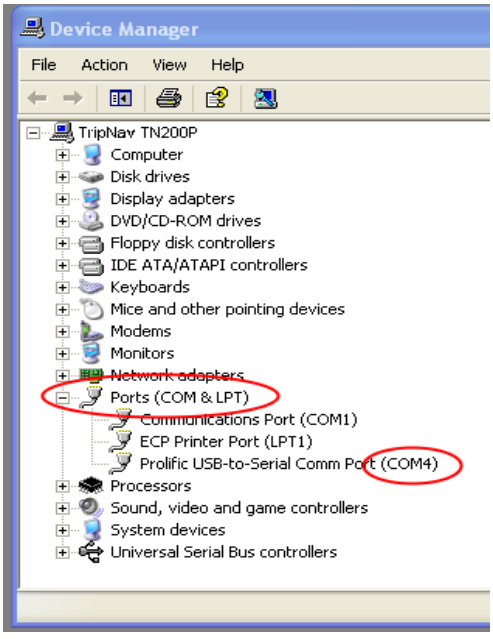
This button will open a Users Guide in .PDF format for Mac users. The manual provides instructions on how to install and properly configure their Mac computer for use with the TN-200 GPS receiver.

Use this button to exit and close the setup screen.

Use this button to install Adobe Acrobat Reader 6.0 if you don't already have it on your computer.

3. VERIFY COM PORT ASSIGNMENT

To verify the COM port number assigned to your GPS, open the "Control Panel," click on "System," select "Device Manager" and look for the heading "Port (COM & LPT)" and maximize it by clicking on the "+" sign. You should see "Prolific USB-to-Serial Comm Port" (COMx) with "x" being the assigned COM port.



NOTE: From within your mapping, or navigation software (including the supplied GPS Information utility), you will need to manually configure the selection of the COM port to what was assigned to the GPS receiver so that proper communication between the GPS receiver and mapping program can occur. Most all software requires that you manually configure the COM port setting for any GPS device you use.

IMPORTANT:

1. You must change the default baud rate setting of your mapping software to 4800 if this is not the default setting otherwise GPS data cannot be received.
2. Set COM port to :

   Baud rate: 4800
   Data bit: 8
   Parity: None
   Stop bit: 1
   Flow control: None

3. UN-INSTALL THE USB DRIVER

To uninstall the Prolific USB driver using either of these two methods:

a. START Button > PROGRAMS > PL-2320 USB-SERIAL > UNINSTALLER.
b. From the Control Panel go to ADD/REMOVE PROGRAMS and select "PL-2303 USB-to-SERIAL"from the list and click on the REMOVE button.

4. INITIALIZING YOUR GPS RECEIVER

Before using your TripNav GPS for navigation (especially for the first time), the receiver must obtain a local GPS fix (coordinates) of the current position. To do this, take your laptop PC (with your USB driver and the mapping software loaded and configured) to an open area that has a clear view to the sky (such as a park or empty field). Start your street map software and wait for initialization of the GPS to complete. This may take a few minutes depending on various factors such as the distance of the current coordinates from the last time the GPS receiver was activated, GPS signal strength and surrounding terrain (tall trees and buildings can block the satellite signals). Once the RAW GPS data is displayed onto the screen, or a fix has indicated that initialization is complete (this will depend on the actual software being used). In some cases initialization can take up to several minutes depending on the conditions mentioned above before complete GPS data will be displayed on the screen.

Coordinates scrolling with zero's means that the COM port connection is correct, but the satellite data is not being received yet (possibly still initializing or in a bad area for satellite reception).

5. USING THE TRIPNAV GPS RECEIVER

Once the TripNav's driver and your personal mapping software have been installed and configured properly, you can begin to use TripNav navigation system by plugging the TripNav into your laptop's USB port and launching your mapping software. If you don't have a mapping, or navigation software to try out your new GPS receiver, we've included a utility called "GPS Information" so that you can test the function of your TN-200. This utility is located within the "GPS Test" directory on the CD-ROM or can be download from our web-site.

Always select an area in the vehicle where the GPS unit will be secure and not obstruct normal driving, visibility and safety, but still maintaining a "view to the sky" in order to receive satellite data.

6. FAQ's

Will the TripNav work with other Street Mapping software?

TripNav USB GPS provides standard NMEA data for mapping software to use and convert to coordinates and should work well with any NMEA compliant software on the market today.

How accurate is the GPS?

The TN-200 has WAAS enabled and can achieve accuracy of up to 5 meters 2-D under the proper conditions.

What is ideal GPS environment?

The GPS requires an open, clear view of the sky. Buildings, covered parking areas, tunnels and dense foliage can cause the GPS receiver to be unable to get a location fix.

If you are parked in a covered parking lot or near a tall building, it is recommended that you drive away until you have a clear view of the sky before using the TripNav. You may need to give the GPS a few minutes to find or get a fix its location.

How do I know if the GPS is ON?

The TripNav must be plugged into your laptop's USB port to get power. If your PC is on and the COM port was configured properly, the GPS receiver is on and receiving the streaming GPS data. This can be verified by opening your mapping software program. In addition, the TN-200 has a built-in LED indicator that works as follows:

LED OFF: GPS receiver is off (no power)
LED ON (solid): No fix, searching for GPS signals.
LED FLASHING: Position fix established and GPS signals are being received

NOTE: The LED sequence is **REVERSED** from all previous versions of the TN-200, which utilized the FTDI USB chipset, as opposed to the Prolific chipset now being used. You may also see references of the part number "TN-200**P"** on our web-site which is often made to help differentiate the prior version TN-200 with the newer "**Prolific**" version of the receiver. (see: http://www.rayming.com/downloads.asp section TripNav, TN200P for more details).

Why does the GPS not work near buildings and other tall objects?

The GPS uses satellites in the space to find out where it is. Therefore it needs a clear view of the sky. Tall buildings and other objects that block the receiver's view to the sky make it infeasible to determine your location.

Sometimes the satellites are not overhead but near the horizon. In these cases the GPS must have a clear view of the horizon.

Why do I get an error message saying "Unable to open GPS Communication with port (COMx)? Please check your port configuration."

If you have followed the above installation steps but the GPS device still does not work, try unplugging the GPS device from the USB port, close the mapping software and wait for at least 10 seconds, before re-connecting the GPS device.

Also verify if the COM port was entered in the mapping software correctly (see: Getting Started – Verify COM Port Assignment). Another possibility is that you may be in an area where there are no GPS signals available. The GPS receiver must have a view to the sky and will not work indoors, or in areas of dense foliage. Move to an open area and place the TripNav receiver in a location that will have a full exposure to the sky. Each time you initialize the GPS receiver, the device requires a boot-up period, which can typically rage from to 8 seconds to 1 minute, but in areas where the GPS signal is weak, this period may be slightly extended. Please allow an adequate amount of time for the GPS receiver's boot-up process to complete before contacting Technical Support.

It is recommended that your O/S has the latest updates installed. Please check with Microsoft on a regular basis, or register for their automatic Service Pack (SP) notifications to be sent to you.

Additional FAQ's may be found on our web-site at: http://www.rayming.com/faq_details/faq_tn200p.asp

Driver updates can be found at Prolific 's web-site: http://tech.prolific.com.tw/visitor/v_welcome.asp (www.prolific.com.tw) Use the Search feature and select FILE and then insert the keyword: PL-2303

7. CONTACT INFORMATION

Rayming Corporation
http://www.rayming.com
sales@rayming.com (no technical support)
service@rayming.com (pre & post sale product questions only, no technical support)

Technical Support
See our FAQ section on our web-site for GPS solutions, driver literature updates.
http://www.rayming.com/faq.asp

Pre-registration is required before receiving any type of technical support. Support issues submitted via phone, fax or e-mail (any means outside of the recognized "Trouble Ticket" generated from your own Rayming registered account) **WILL NOT** be answered.
Create your account and register your products at: www.rayming.com/support/custadminlogin.asp

8. LIMITED WARRANTY

Rayming Corporation warrants this product hardware against manufacturing defects in material and workmanship under normal use for one (1) year from the date of purchase from an authorized dealer. Except as provided herein, Rayming Corporation makes no express warranties', including but not limited to any warranties of merchantability or fitness for particular use, or non-infringement. You acknowledge that your use of the product or service is at your sole risk and you agree that the information provided are without warranty of any kind by Rayming Corporation.
Under no circumstances, including negligence, will Rayming Corporation or any of its affiliates, directors, officers or employees, or any third party be liable for any direct, indirect, incidental, special or consequential damages that results from your use, or your inability to use, or the performance of the product(s) with respect to any liability, loss, or arising out of any breach of this warranty, including, but not limited to any damages resulting from inconvenience, loss of time, data, property, revenue, or profit or any indirect, special incidental or consequential damages. You acknowledge that this limitation applies to all content information or other services available from Rayming Corporation, and whether or not Rayming Corporation has notice of the possibility of such damages, and whether or not to circumstances giving rise to such damages may have been within the control of Rayming Corporation.
Some states do not allow the exclusion of certain warranties, so some of the above exclusions may not apply to you. In those states, liability is limited to the fullest extent allowed by law By using the product(s), you agree to indemnify Rayming Corporation and its parents, subsidiaries, affiliates, officers and employees and hold them harmless from any and all claims and expenses, including reasonable attorney's fees, asserted third party due to, or arising out of your use of the service and the site.

In the event of a product defect during the first 30-days of the warranty period, return product and the sales receipt as proof of purchase date to place of original purchase. Defect discovered after 30-days from date of purchase, you must contact Rayming Corporation's Technical support for a Return Merchandise Authorization (RMA) number for return to manufacturer.

Rayming Corporation will, at its option, unless otherwise provided by law:

a.) Correct the defect by product repair without charge for parts and labor;
b.) Replace the product with one of the same or similar design; or
c.) Refund the purchase price. All replaced parts and products, and products on which a refund is made, become the property of Rayming Corporation. New or reconditioned parts may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

This warranty does not cover:

a.) Damage or failure caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow the instructions, improper installation or maintenance, alteration, lighting or other incidence of excess voltage or current;
b.) Any repairs other than those provided by Rayming Corporation;
c.) Consumables such as fuses or batteries;
d.) Cosmetic damage;
e.) Transportation, shipping or insurance costs;
f.) Costs of product removal, installation, set-up service adjustment or reinstallation.

This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state.

Additional products bundled in this package not manufactured by Rayming Corporation will hold separate warranties as expressed by the individual manufacturer of that product(s). Product specifications, functions and features are subject to change without notice.

9. TECHNICAL SPECIFICATIONS FOR TN-200 GPS RECEIVER

Electrical Characteristics (Receiver)	
GPS Chipset	SiRF Star II e/LP
Frequency	L1, 1575.42 MHZ
C/A Code	1.023 MHz chip rate
Channels	12
Sensitivity	-170 dBW
Accuracy	
Position Horizontal	15m 2-D RMS (SA off)
Velocity	0.1m/sec 95% (SA off),
Time	1 micro-second synchronized to GPS time
WAAS	5m 2d RMS WAAS enabled
Datum	
Datum	WGS-84
Acquisition Rate	
Hot start	8 sec., average (with ephemeris and almanac valid)
Warm start	38 sec., average (with almanac but not ephemeris)
Cold start	45 sec., average (neither almanac nor ephemeris)
Reacquisition	0.1 sec. average (interruption recovery time)
Protocol	
GPS Protocol	Default: NMEA 0183 (Secondary: SiRF binary)
GPS Output Data	SiRF binary >> position, velocity, altitude, status and control NMEA 0183 MEA0183 V2.2 protocol, and supports command: GGA, GSA, GSV, RMC, VTG, GLL v2.2 (VTG and GLL are optional)
GPS transfer rate	Software command setting (Default : 4800,n,8,1 for NMEA)
Dynamic Condition	
Acceleration Limit	Less than 4g
Altitude Limit	18,000 meters (60,000 feet) max.
Velocity Limit	515 meters/sec. (1,000 knots) max.
Jerk Limit	20 m/sec**3
Temperature	
Operating	-30°~ 80°C
Storage	-40°~ 85°C
Humidity	Up to 95% non-condensing
Power	
Voltage	5V ±5%
Current	90mA typical
Physical Characteristics	
Dimension	2.32" x 1.65" x 0.82" (59mm x 47mm x 12mm)
USB Cable Length	60"
Low Noise Amp	
Amplifier Gain w/out cable	27 dB Typical
Filtering	-25dB (+100 MHz)
Output VSWR	2.0 Max.
Voltage	DC 3 ~ 5.0V
Current	15mA max @ 5VDC

Due to continuous product improvements, all specifications are subject to change without notice.